OSTRACODA FROM THE UPPER TEALBY CLAY (LOWER BARREMIAN) OF SOUTH LINCOLNSHIRE

by P. KAYE and D. BARKER

ABSTRACT. Thirty-two species and subspecies of Ostracoda are recorded from the Upper Tealby Clay (Lower Barremian) at Dalby Hill, South Lincolnshire. Three species, *Cytherelloidea dalbyensis*, *Amphicytherura bartensteini* and *Orthonotacythere problematica* are considered new; two species are left under open nomenclature. Abundance data are given, and the ranges of the species in other British Lower Cretaceous formations are shown.

SINCE the latter part of last century the Tealby Series of the Wolds of Lincolnshire has been divisible into three on a lithological basis (Judd 1867, 1870; Lamplugh 1896). However, the relationship to the beds above and below is uncertain due to a paucity of fossils and exposures. The three lithologic divisions of the Tealby Series are from the base, the Lower Tealby Clay followed by the Tealby Limestone, and at the top the Upper Tealby Clay. In this account we deal only with the ostracods from the Upper Tealby Clay, the major exposure of which in the South Wolds at the present time is the road cutting at Dalby Hill (G.R. TF/409696). In the course of field mapping during the period 1963–4, J. Newton-Smith of Leicester University brought the roadside section at Dalby Hill to our notice. The ostracods found in the washings of his samples prompted the authors to collect further samples during April 1964. The Upper Tealby Clay is generally a dark clay very rich in limonite ooliths; locally it is glauconitic and there are occasional horizons rich in pyrite. Macrofossils obtained from this clay include *Liostrea*, *Oxyteuthis*, and *Aulacoteuthis*. The Ostracoda obtained from this horizon are of Lower Barremian age. The specimens described are all deposited in the collections of the British Museum of Natural History (BMNH), London.

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SYSTEMATIC DESCRIPTIONS

Order PODOCOPIDA Müller 1894
Suborder PLATYCOPINA Sars 1866
Family CYTHERELLIDAE Sars 1866
Genus CYTHERELLOIDEA Alexander 1929

Cytherelloidea ovata Weber 1934

1934 *Cytherelloidea ovata* Weber, 145, pl. 8, fig. 4.
1950 *Cytherelloidea ovata* Weber; Wolburg, 162.
1963*a* *Cytherelloidea ovata* Weber; Kaye, 115, pl. 20, figs. 18–21.

Material. A left valve BMNH Io.3048, from the Upper Tealby Clay, Dalby Hill, Lincs.

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Cytherelloidea dalbyensis sp. nov.

Plate 33, figs 1, 2

Holotype. A right valve BMNH Io.3068, from the Upper Tealby Clay, Dalby Hill, Lincs.

Paratype. A right valve BMNH Io.3069, from the same horizon and locality.

Diagnosis. Large *Cytherelloidea*, strongly compressed laterally. Dorsal rib complex, joined both anteriorly and posteriorly to the median rib. Shell surface strongly pitted, almost reticulate.

Measurements. R.V. Holotype Io.3068; length 0·80 mm., height 0·30 mm.

Description. Valves elongate, rather thin and strongly compressed laterally. The dorsal and ventral margins are subparallel but both show a weak concavity centrally in the larger right valves. Anterior margin semicircular, posterior margin rather subquadrate. The lateral surface bears a series of low ribs with shallow depressions between them. Posteriorly the valve is more inflated having a swollen area from which the longitudinal ribs run. Anteriorly there is a crescentic weakly-inflated marginal area equal in width to about one-sixth of the length. This anterior marginal 'strip' merges with the long margins, antero-dorsally and antero-ventrally. Three longitudinal ribs cross the lateral surface, the ventral one being most prominent. This rib runs in a weakly arcuate path a short distance above the ventral margin for the bulk of the length of the valve; posteriorly it is joined to the inflated posterior area but anteriorly it is separated from the marginal strip by a shallow groove. Ventrally from this rib there is a wide marginal shelf. The median rib starts posteriorly at $\frac{3}{4}$ height running horizontally for a short distance and then bifurcates at $\frac{2}{3}$ length. A long ventrally convex portion runs below the muscle pit terminating at $\frac{1}{4}$ length whilst a short upper portion runs dorsally to join the dorsal rib at the mid-length of the valve. The dorsal rib is weak and short; it runs from a position on the dorsal margin at mid-length of the valve obliquely to join the anterior end of the lower branch of the median rib; it is entirely separate from the anterior marginal strip. Between the ribs the valve surface is strongly pitted.

Remarks. Cytherelloidea dalbyensis shows strong affinities to *C. elongata* Kaye 1963*a* from the Middle Barremian of East Yorkshire but is distinct in the pattern of the ribs from any other described Mesozoic species of the genus. From *C. elongata*, *C. dalbyensis* differs in shape and in being much less inflated with the ribs and depressions much less well differentiated; there are also differences in the arrangement of the ribs. In *C. elongata* the ventral rib runs along the margin and is joined anteriorly to a much broader anterior marginal 'strip'. The dorsal rib also runs to join this marginal strip and not the anterior end of the median rib.

Suborder PODOCOPINA Sars 1866
Superfamily CYTHERACEA Baird 1850
Family CYTHERIDEIDAE Sars 1925
Genus DOLOCYTHERIDEA Triebel 1938

Dolocytheridea intermedia Oertli 1958

1958 *Dolocytheridea intermedia* Oertli, 1505, pl. 3, figs. 63–74, pl. 4, figs. 75–82.
1963*c* *Dolocytheridea intermedia* Oertli; Kaye, 33, pl. 3, figs. 10–14.

Material. A right valve BMNH Io.3051, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus CLITHROCYTHERIDEA Stephenson 1936

Clithrocytheridea brevis (Cornuel) 1846

1846 *Cythere amygdaloides* var. *brevis* Cornuel, 199, pl. 7, fig. 12.
1956 *Clithrocytheridea brevis* (Cornuel) Deroo, 1510, pl. 11, figs. 15–21.

Material. Five valves BMNH Io.3052, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus SCHULERIDEA Swartz and Swain

Schuleridea cf. *bernouilensis* Grosdidier 1964

Plate 33, figs. 9, 10

?1964 *Schuleridea bernouilensis* Grosdidier, 225, pl. 1, figs. 2*a–g*.

Material. Two valves and one carapace BMNH Io.3053–5, from the Upper Tealby Clay, Dalby Hill Lincs.

Remarks. Abundant specimens of a species very closely akin to the French Lower Barremian form *S. bernouilensis* Grosdidier are found at Dalby Hill. Apart from a much poorer development of the eye node in the British material the two forms seem to be identical.

Schuleridea rhomboidalis Neale 1960

1960 *Schuleridea rhomboidalis* Neale, 210, pl. 2, figs. 1, 2, 5, 7, 8.
1963*c* *Schuleridea rhomboidalis* Neale; Kaye, 32, pl. 3, figs. 1–4.

Material. A right valve BMNH Io.3058, from the Upper Tealby Clay, Dalby Hill, Lincs.

EXPLANATION OF PLATE 33

All figs. ×60; all specimens from the Upper Barremian of Dalby Hill, Lincs.

Figs. 1, 2. *Cytherelloidea dalbyensis* sp. nov. 1, R.V. (Holotype), lateral view; Io.3068. 2, R.V. (Paratype), lateral view; Io.3069.

Figs. 3, 4. *Orthonotacythere problematica* sp. nov. 3, L.V. (Holotype), lateral view; Io.3060. 4, Carapace (Paratype), dorsal view; Io.3061.

Figs. 5–8. *Amphicytherura bartensteini* sp. nov. 5, Female L.V. (Holotype), lateral view; Io.3071. 6, Male R.V. (Paratype), lateral view; Io.3073. 7, Male L.V. (Paratype); lateral view; Io.3072. 8, Female R.V. (Paratype), lateral view; Io.3074.

Figs. 9, 10. *Schuleridea* cf. *bernouilensis* Grosdidier. 9, L.V., lateral view; Io.3053. 10, R.V., lateral view; Io.3054.

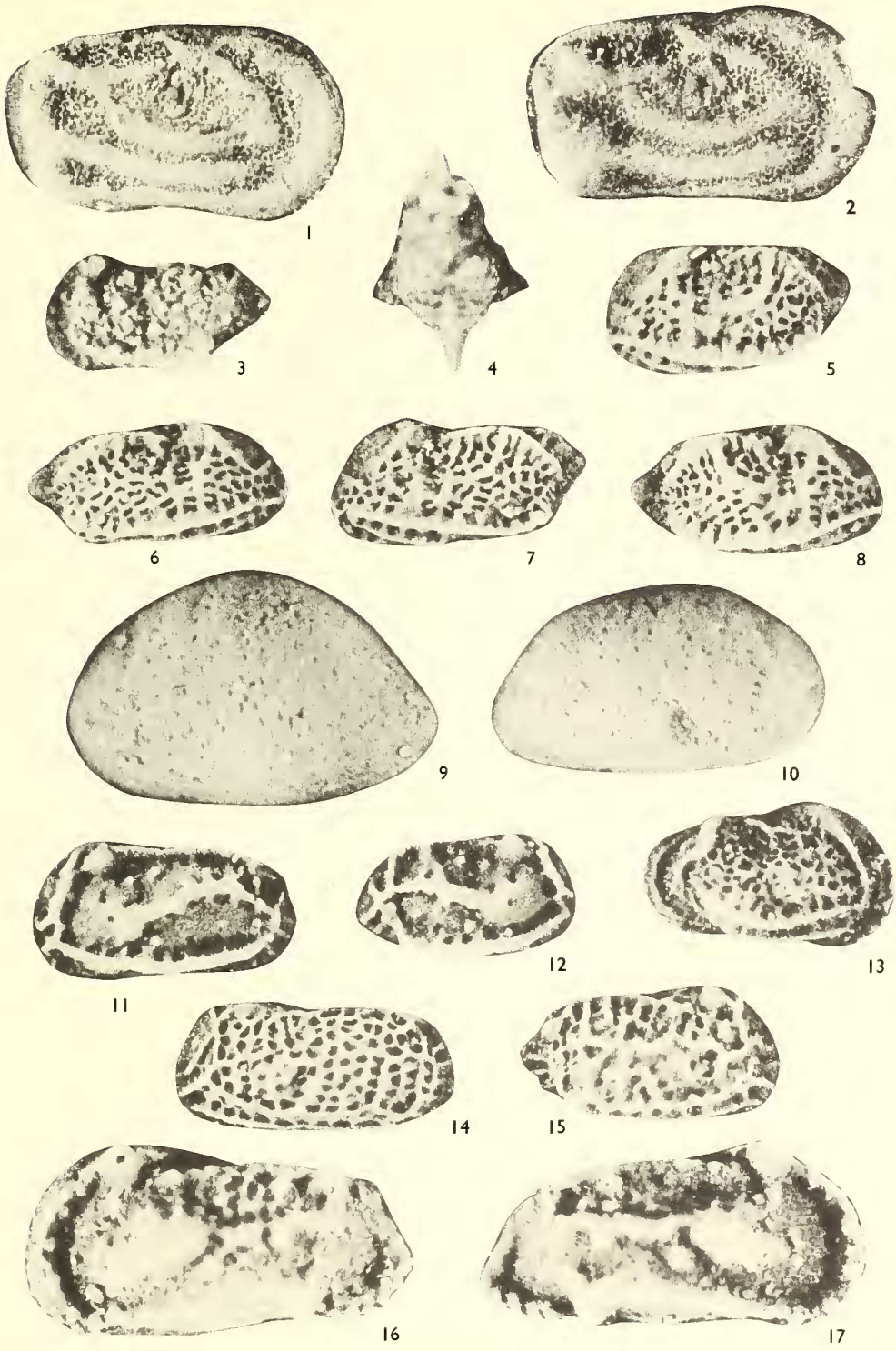
Figs. 11, 12. *Amphicytherura roemeri* (Bartenstein). 11, Male L.V., lateral view; Io.3034. 12, Female R.V., lateral view; Io.3035.

Fig. 13. *Ranocythereis caistorensis* Kaye. R.V. lateral view; Io.3033.

Fig. 14. *Acrocythere hauteriviana laeva* Neale. Male L.V., lateral view; Io.3046.

Fig. 15. *Acrocythere hauteriviana hauteriviana* (Bartenstein). Female R.V., lateral view; Io.3044.

Figs. 16, 17. *Cythereis* cf. *geometrica* Damotte and Grosdidier. 16, Male L.V., lateral view; Io.3063. 17, Male R.V., lateral view; Io.3064.



KAYE and BARKER, Lower Cretaceous ostracods

Genus APATOCYTHERE Triebel 1940

Apatocythere ellipsoidea Triebel 1940

1940 *Apatocythere ellipsoidea* Triebel, 171, pl. 2, figs. 20–26, pl. 9, figs. 104.
1956 *Apatocythere ellipsoidea* Triebel; Deroo, 1510.
1963*c* *Apatocythere ellipsoidea* Triebel; Kaye, 32, pl. 3, figs. 5–7.

Material. A left valve BMNH Io.3056, from the Upper Tealby Clay, Dalby Hill, Lincs.

Apatocythere simulans Triebel 1940

1940 *Apatocythere simulans* Triebel, 170, pl. 1, figs. 14–19, pl. 9, fig. 103.
1960 *Apatocythere simulans* Triebel; Neale, 210, pl. 2, figs. 1, 2, 5, 7, 8.
1963*c* *Apatocythere simulans* Triebel; Kaye, 32, pl. 3, figs. 1–4.

Material. A right valve BMNH Io.3057, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus EURYITYCYTHERE Oertli 1959

Euryitycythere sp. B

Material. A carapace BMNH Io.3070, from the Lower Barremian, Dalby Hill.

Measurements. Carapace Io.3070; length 0·60 mm., height 0·32 mm.

Remarks. This extremely rare species is represented by a single closed carapace from Dalby Hill. It is closely related to the Hauterivian species *E. parisiorum* Oertli 1959 but differs in having a crest-like ridge running along the dorsal margin of the larger left valve. This crest also partially overlaps the dorsal margin of the right valve. A further difference is the stronger flattening of the lateral expansion ventrally forming a short blade-like longitudinal rib.

This occurrence is the first record of the genus in the Barremian though a worn but distinctly different specimen has been recorded (Kaye 1965*c*) from the Upper Aptian of the Isle of Wight.

Family CYTHERURIDAE Müller 1894
Genus AMPHICYTHERURA Butler and Jones 1957

Amphicytherura bartensteini sp. nov.

Plate 33, figs. 5–8

Holotype. A female left valve BMNH Io.3071, from the Upper Tealby Clay, Dalby Hill, Lincs.

Paratypes. Six valves BMNH Io.3072–5, from the same horizon and locality.

Diagnosis. Amphicytherura with strongly reticulate lateral surface and marked keel-like ventral longitudinal rib.

Measurements.	*Length*	*Height*
Female L.V. Holotype Io.3071	0·57 mm.	0·30 mm.
Female R.V. Paratype Io.3074	0·57 mm.	0·30 mm.
Male L.V. Paratype Io.3072	0·60 mm.	0·30 mm.

Description. Valves subquadrate in outline, strongly laterally compressed. Dorsal and ventral margins straight and subparallel in the left valves. Anterior margin bluntly rounded, slightly asymmetrical ventrally; posterior drawn out into an acute point at $\frac{2}{3}$ height. Lateral surface bearing a series of ribs. The most prominent is high keel-like, ventrally arcuate, ventral longitudinal; this rib runs from the anterior margin at $\frac{1}{4}$ height across the lateral surface to terminate on the postero-lateral surface at mid-height. A further longitudinal rib runs below this one on the ventral undersurface following a ventrally identical path but reaching the margin postero-ventrally as well as antero-ventrally. A low smooth eye tubercle occurs antero-dorsally bearing a series of weak ribs on its upper surface. These ribs run weakly ventrally and antero-ventrally for a short distance across the lateral surface. A short rib runs from the dorsal margin at mid-length curving towards the posterior margin and terminating at mid-height. A weak node or rudimentary median rib occurs postero-laterally in certain specimens. The whole of the lateral surface is strongly reticulate. Duplicature narrow crossed by few straight radial pore canals. Hinge strongly amphidont, with boss-like divided terminal teeth and strongly divided median furrow in the right valve. Muscle group a row of four oval scars slightly inclined posteriorly with a single small oval scar anteriorly to them opposite the centre of the row.

Remarks. The strong reticulate ornamentation of this species and weak dorsal and median ribbing make it distinct from other members of the genus. It is one of the most abundant ostracods in the Upper Tealby Clay (Lower Barremian) of South Lincs. and is one of the few abundant ostracods from this formation not found in the Lower Tealby Clay and Tealby Limestone (U. Hauterivian) of North Lincs.

Amphicytherura roemeri (Bartenstein) 1956

Plate 33, figs. 11, 12

1956 *Orthonotacythere roemeri* Bartenstein, 531, pl. 3, figs. 76–77.
1965*a* *Amphicytherura roemeri* (Bartenstein), Kaye, 79, pl. 5, figs. 5–7.

Material. Two valves BMNH Io.3034–5, from the Upper Tealby Clay (Lower Barremian), Dalby Hill, Lincs.

Remarks. This species, characteristic of the Upper Hauterivian in N. Lincs, occurs fairly abundantly in the Lower Barremian of S. Lincs.

Genus EUCYTHERURA Müller 1894

Eucytherura nettletonensis Kaye 1964*b*

1964*b* *Eucytherura nettletonensis* Kaye, 321, pl. 55, figs. 5, 6, 8.

Material. Four valves BMNH Io.3040, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus CYTHERURA Sars 1866

Cytherura reticulosa (Chapman) 1894

1894 *Cytheropteron reticulosum* Chapman, 692, pl. 33, figs. 6*a–c*.
1964*b* *Cytherura reticulosa* (Chapman); Kaye, 318, pl. 55, figs. 7, 9.

Material. A left valve BMNH Io.3038, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus CYTHEROPTERON Sars 1866
Subgenus CYTHEROPTERON Sars 1866

Cytheropteron (*Cytheropteron*) *reightonensis* Kaye 1964*a*

1964*a* *Cytheropteron* (*C.*) *reightonensis* Kaye, 102, pl. 5, figs. 1–5.

Material. A left valve BMNH Io.3039, from the Upper Tealby Clay, Dalby Hill, Lincs.

Cytheropteron (*C.*) *rugosa* Kaye 1965*a*

1965*c* *Cytheropteron* (*C.*) *rugosa* Kaye, 38, pl. 8, figs. 4–5.
1965*d* *Cytheropteron* (*C.*) *rugosa* Kaye, Kaye and Barker, 379, pl. 48, fig. 6.

Material. A left valve BMNH Io.3037, from the Upper Tealby Clay, Dalby Hill, Lincs.

Subgenus EOCYTHEROPTERON Alexander 1933

Cytheropteron (*Eocytheropteron*) *nova* Kaye 1964*a*

1964*a* *Cytheropteron* (*Eocytheropteron*) *nova*, Kaye, 104, pl. 5, fig. 6.
1965*a* *Cytheropteron* (*Eo.*) *nova* Kaye; Kaye, 75, pl. 5. figs. 18–20.

Material. Two valves BMNH Io.3062, from the Upper Tealby Clay, Dalby Hill, Lincs.

Subgenus INFRACYTHEROPTERON Kaye 1964*a*

Cytheropteron (*Infracytheropteron*) *exquisita* Kaye 1964*a*

1964*a* *Cytheropteron* (*Infracytheropteron*) *exquisita* Kaye, 105, pl. 5, figs. 9–10.
1965 *Cytheropteron* (*I.*) *exquisita* Kaye; Kaye and Barker, 380.

Material. A right valve BMNH Io.3036, from the Upper Tealby Clay, Dalby Hill, Lincs.

Genus ORTHONOTACYTHERE Alexander 1934

Orthonotacythere blanda Kaye 1963*e*

1963*e* *Orthonotacythere blanda* Kaye, 437, pl. 61, figs. 17, 18.

Material. A left valve BMNH Io.3043, from the Upper Tealby Clay, Dalby Hill, Lincs.

Orthonotacythere inversa inversa (Cornuel) 1848

1848 *Cythere inversa* Cornuel, 244, pl. 1, figs. 12–14.
1963*e* *Orthonotacythere inversa inversa* (Cornuel); Kaye, 435, pl. 61, figs. 1–8, 12, 13.

Material. A left valve BMNH Io.3042, from the Upper Tealby Clay, Dalby Hill, Lincs.

Orthonotacythere problematica sp. nov.

Plate 33, figs. 3, 4

1965*c* *Orthonotacythere* sp. A. Kaye.

Holotype. A left valve BMNH Io.3060 from the Lower Barremian at Dalby Hill, Lincs.

Paratypes. One valve and one carapace BMNH Io.3061, from the Lower Barremian at Dalby Hill; 4 valves and 1 carapace BMNH Io. 2070–74, from the basal Atherfield Clay (Lower Aptian) Atherfield, Isle of Wight.

Diagnosis. Small *Orthonotacythere* with tuberculate lateral surface and ventral ridge increasing in height posteriorly. The ventral ridge is drawn out into an alaeform spine posteriorly.

Measurements. Holotype, L.V. Io.3060; length 0·47 mm., height 0·25 mm.

Remarks. This species originally described from the Lower Aptian of the Isle of Wight is here named. The Upper Tealby specimens are a little larger than the Aptian ones and have the ventral row of tubercles fused to form a prominent ridge.

Genus ACROCYTHERE Neale 1960

Acrocythere hauteriviana hauteriviana (Bartenstein) 1956

Plate 33, fig. 15

1956 *Orthonotacythere hauteriviana* Bartenstein, 532, pl. 3, fig. 81.
1965*a* *Acrocythere hauteriviana hauteriviana* (Bartenstein); Kaye, 78, pl. 5, figs. 12–13.

Material. Two valves BMNH Io.3044–5, from the Lower Barremian, Dalby Hill, Lincs.

Remarks. This characteristic Hauterivian and Lower Barremian subspecies is fairly common at Dalby Hill. The most abundant member of this group in this formation being *A. hauteriviana laeva* Neale, the reverse of the situation at Speeton.

Acrocythere hauteriviana laeva (Neale) 1960

Plate 33, fig. 14

1960 *Orthonotacythere* (*Acrocythere*) *hauteriviana laeva* Neale, 213, pl. 3, figs. 10*a–b*, pl. 4, fig. 13.
1965*a* *Acrocythere hauteriviana laeva* (Neale); Kaye 78, pl. 5, fig. 17.

Material. Two valves BMNH Io.3046–7, from the Upper Tealby Clay (L. Barremian), Dalby Hill, Lincs.

Remarks. This species is extremely abundant at Dalby Hill but is rare at Speeton.

Genus PSEUDOBYTHOCYTHERE Mertens 1956

Pseudobythocythere ornata Kaye 1965*a*

Material. Three valves BMNH Io.3067, from the Upper Tealby Clay, Dalby Hill, Lincs.

Pseudobythocythere vellicata (Chapman) 1894

1894 *Cytheridea vellicata* Chapman, 690, pl. 33, figs. 3*a–c*.
1964*b* *Pseudobythocythere vellicata* (Chapman); Kaye, 323, pl. 54, figs. 14, 17, 18, pl. 55, figs. 10, 11.
1965*c* *Pseudobythocythere vellicata* (Chapman); Kaye, 42, pl. 8, figs. 14, 15.

Material. Four valves BMNH Io.3066, from the Upper Tealby Clay, Dalby Hill, Lincs.

Family PROGONOCYTHERIDAE Sylvester-Bradley 1948
Subfamily PROGONOCYTHERINAE Sylvester-Bradley 1948
Genus NEOCYTHERE Mertens 1956

Neocythere (*N.*) *protovanveeni* Kaye 1963*b*

Material. Four valves BMNH Io.3050 from the Upper Tealby Clay, Dalby Hill.

Subfamily PROTOCYTHERINAE Mandelstam 1960
Genus PROTOCYTHERE Triebel 1938

Protocythere inornata Kaye 1964*b*

Material. A right valve BMNH Io.3049 from the Upper Tealby Clay, Dalby Hill.

Protocythere hechti Triebel 1938

1938 *Protocythere hechti* Triebel, 189, pl. 1. figs. 11–16.
1956 *Protocythere hechti* Triebel; Deroo, 1513.
1956 *Protocythere hechti* Triebel; Bartenstein, 530, pl. 3. figs. 73–75.
1962 *Protocythere hechti* Triebel; Neale, 446, pl. 9. figs. 5–7.

Material. A left valve BMNH Io.3059 from the Upper Tealby Clay, Dalby Hill.

Family TRACHYLEBERIDIDAE Sylvester-Bradley 1948
Genus CYTHEREIS Jones 1849

Cythereis blanda Kaye 1963*d*

Material. Two valves BMNH Io.3041 from the Upper Tealby Clay, Dalby Hill.

Cythereis cf. *geometrica* Damotte and Grosdidier 1963

Plate 33, figs. 16, 17

Material. Five valves and one carapace BMNH Io.3063–5 from the Upper Tealby Clay, Dalby Hill.

Remarks. Specimens related to *C. geometrica* Damotte and Grosdidier 1963 occur abundantly in the Upper Tealby Clay. The major difference between the two species is the stronger development of the median longitudinal ridge in the Lower Barremian forms. This feature shows similarities to *C. geometrica fittoni* Kaye 1965*c* from the Upper Aptian of the Isle of Wight but the Lincolnshire specimens lack the strong surface reticulation of the latter species. It is possible that the Lower Barremian forms are ancestral to the Aptian species.

Genus RANOCYTHEREIS Kaye 1965*b*

Ranocythereis caistorensis Kaye 1965*b*

Plate 33, fig. 13

Material. A right valve BMNH Io.3033 from the Upper Tealby Clay, Dalby Hill, Lincs.

Remarks. This species, previously recorded from the Lower Tealby Clay and Tealby Limestone (Hauterivian) of Nettleton, N. Lincs., occurs moderately rarely at Dalby Hill.

CONCLUSIONS

The Upper Tealby Clay at Dalby Hill is rich in ostracoda, both in numbers of individuals, and in number of species. The relative abundances of the thirty-two species and subspecies recorded are summarized as follows:

Abundant

Clithrocytheridea brevis (Cornuel); *Eucytherura nettletonensis* Kaye; *Schuleridea* cf. *bernouilensis* Grosdidier; *Amphicytherura bartensteini* sp. nov.; *Acrocythere hauteriviana laeva* Neale; *Pseudobythocythere ornata* Kaye; *Pseudobythocythere vellicata* (Chapman); *Neocythere* (*N.*) *protovanveeni* Kaye; *Protocythere hechti* Triebel; *Cythereis blanda* Kaye; *Cythereis* cf. *geometrica* Damotte and Grosdidier.

Common

Schuleridea rhomboidalis Neale; *Apatocythere ellipsoidea* Triebel; *Amphicytherura roemeri* (Bartenstein); *Cytheropteron* (*Eo.*) *nova* Kaye; *Acrocythere hauteriviana hauteriviana* (Bartenstein).

Frequent

Cytherelloidea ovata Weber; *Apatocythere simulans* Triebel; *Dolocytheridea intermedia* Oertli; *Orthonotacythere inversa inversa* (Cornuel); *Protocythere triplicata* (Roemer); *Ranocythereis caistorensis* Kaye.

Rare

Cytherelloidea dalbyensis sp. nov.; *Bairdia sp.*; *Cytherura reticulosa* (Chapman); *Cytheropteron* (*C.*) *reightonensis* Kaye; *Eurytycythere* sp. B.; *Cytheropteron* (*C.*) *rugosa* Kaye; *Cytheropteron* (*Infra.*) *exquisita* Kaye; *Orthonotacythere blanda* Kaye; *Orthonotacythere problematica*; *Protocythere inornata* Kaye.

The known range of the Upper Tealby Ostracoda and their geographical occurrence in England are shown in text-fig. 1.

The Upper Tealby fauna is Lower Barremian in age; with such species as *Orthonotacythere blanda*, *O. inversa inversa* and, *Pseudobythocythere ornata* being only known previously from beds at this horizon at Speeton, E. Yorks. The fauna as a whole shows strong affinities to the lithologically similar Upper Hauterivian at Nettleton in N. Lincs., seventeen of the species recorded at Dalby Hill being also known from Nettleton; Lower Barremian strata are absent in N. Lincs. The clays of Upper Hauterivian and Lower Barremian age at Speeton differ markedly from those at Dalby, lacking the glauconite and iron carbonate ooliths. Nine species found at Dalby Hill occur in higher Barremian horizons at Speeton; the known range of one (*Cythereis blanda*) being extended down into the Lower Barremian. Four Hauterivian species: *Eucytherura nettletonensis*, *Amphicytherura roemeri*, *Acrocythere hauteriviana laeva*, and *Ranocythereis caistorensis* have their known ranges extended up into the Lower Barremian whilst

SPECIES	UPPER HAUTERIVIAN		BARREMIAN			APTIAN	
	UPPER		LOWER		M&U	L&U	UPPER
	Nettleton N.Lincs.	Speeton E.Yorks.	Dalby Hill S.Lincs.	Speeton E.Yorks	Speeton E.Yorks	South East England	Suttersby S.Lincs.
Cytherellaidea dalbyensis nov.			X				
Cytherellaidea avata Weber.	X	X	X	X	X	X	X
Bairdia sp.			X				
Clithracytheridea brevis (Carnuel).			X				
Dalacytheridea intermedia Oertli.	X	X	X	X	X		
Schuleridea cf. bernauilensis Grasdidier.			X				
Schuleridea rhambaidalis Neale.	X	X	X	X			
Apatacythere ellipsaidea Triebel.	X	X	X	X	X		
Apatacythere simulans Triebel.	X	X	X	X			
Euryitycythere sp. B.			X				
Cytherura reticulasa (Chapman).	X		X			X	X
Eucytherura nettletanensis Kaye.	X		X				
Amphicytherura bartensteini nav.			X				
Amphicytherura raemeri (Bartenstein).	X		X				
Cytherapteran (C.) reightanensis Kaye.			X	X	X		
Cytherapteran (C.) rugasa Kaye.	X		X			X	X
Cytherapteran (Ea) nava Kaye.	X	X	X	X	X		
Cytherapteran (Infra) exquisita Kaye.			X	X	X	X	X
Orthanatacythere inversa inversa (Carnvel).			X	X			
Orthanatacythere blanda Kaye.			X	X			
Orthanatacythere prablematica nov.			X				
Pseudabythacythere arnata Kaye.	X		X	X			
Pseudabythacythere vellicata (Chapman).			X			X	
Acracythere hauteriviana hauteriviana (Bartenstein).	X	X	X	X			X
Acracythere hauteriviana laeva Neale.	X	X	X				
Neacythere (N.) pratavanveeni Kaye.	X		X	X	X		
Protocythere inornata Kaye.			X			X	
Pratacythere hechti Triebel.	X	X	X	X			
Pratacythere triplicata (Raemer).	X	X	X	X	X		
Cythereis blanda Kaye.			X		X	X	
Cythereis cf. geametica D&G.			X			X	
Ranacythereis caistarensis Kaye.	X		X				

TEXT-FIG. 1. Known distribution of Ostracoda found in the Upper Tealby Clay at Dalby Hill.